BIG DATA PROCESSING IN ARTWORK ANALYSIS

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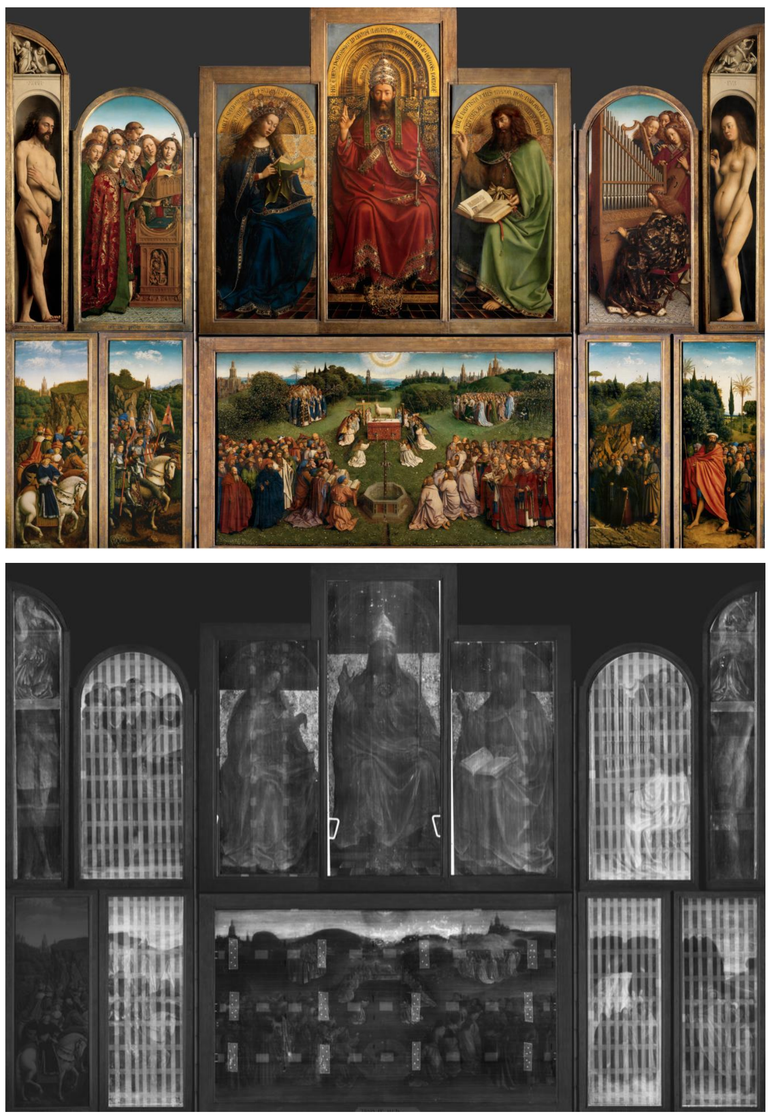
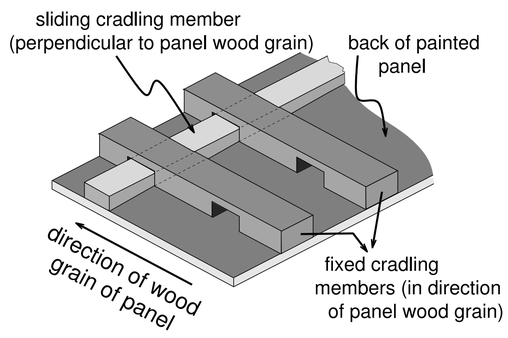


The Ghent Altarpiece (open):
visual image (top) and X-ray image (bottom)

Closed altarpiece: Before (top)
and after restoration (bottom)

CRADLE REMOVAL

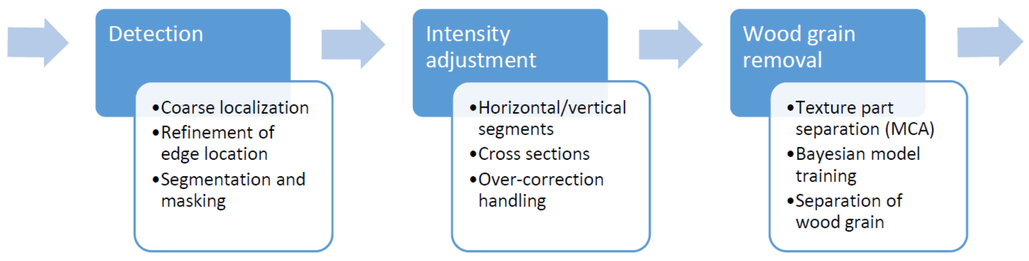
WHAT IS CRADLING?

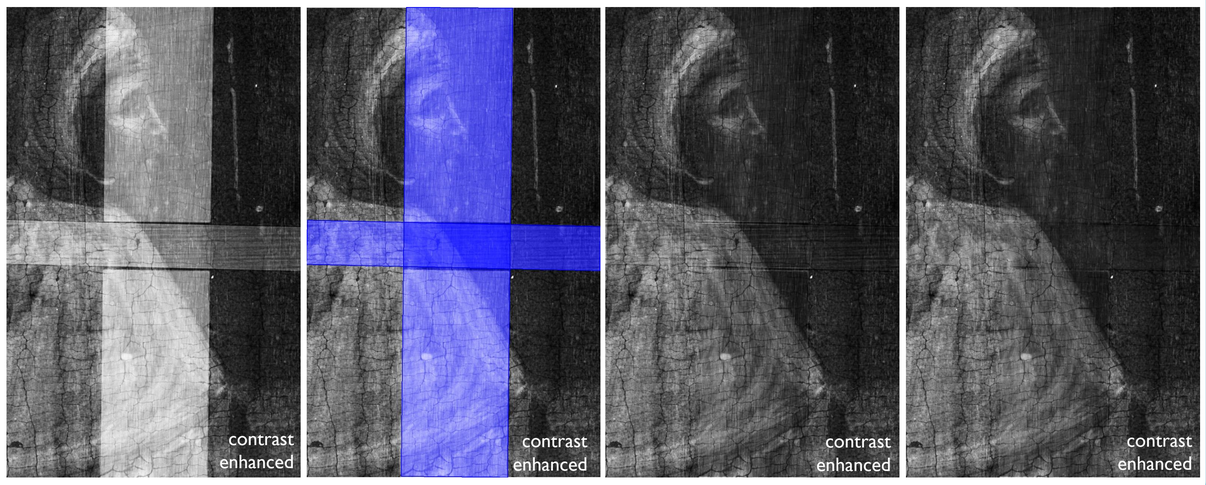


MEET PLATYPUS: A software solution that comes as a standalone application and a Photoshop plugin. It is specifically designed to digitally remove cradling artifacts in X-ray images of paintings on panel.

http://project-platypus.net/

THE PROCESSING STAGES OF PLATYPUS





*by courtesy of the North Carolina Museum of Art

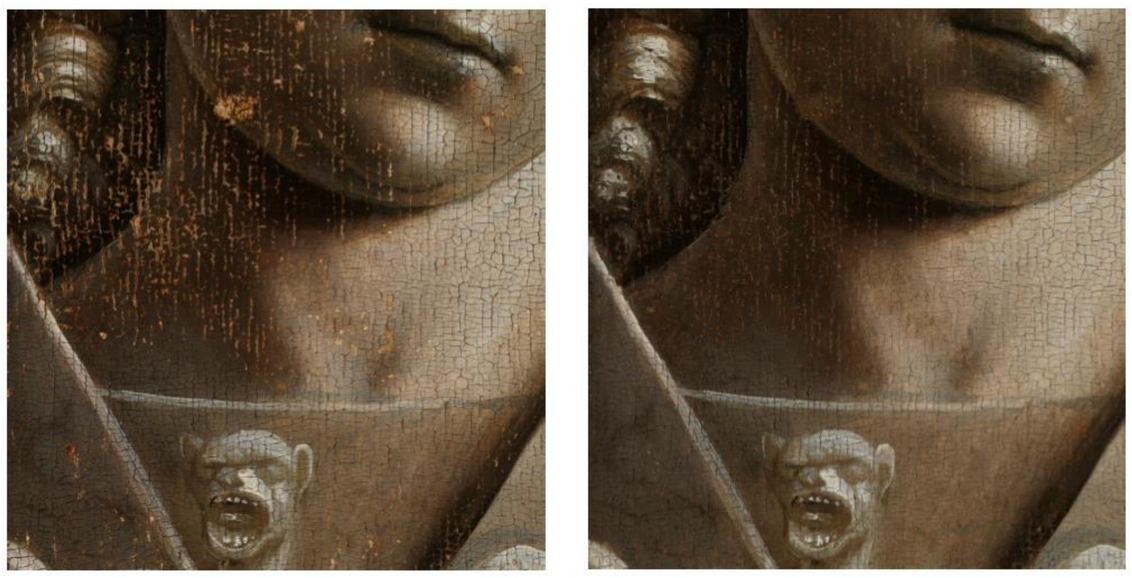
VIRTUAL RESTORATION

Image processing in the service of painting restoration:

- Identify **paint loss** areas caused by aging and deterioration to assist pre-restoration analysis
- Identify areas of **overpaint** from previous restorations to assist pre-restoration analysis as well as to automate the reporting process (annotation of overpaint, retouches, fills)
- Use digital inpainting to fill-in the missing paint to provide a "simulation" for the impact of certain actions to be taken during the physical restoration process

PAINT LOSS DETECTION

VIRTUAL INPAINTING



SELECTED PUBLICATIONS:

Huang et al., Paint Loss Detection in Old Paintings by Sparse Representation Classification, iTWIST 2016.

Deligiannis et al., "X-ray image separation via coupled dictionary learning," IEEE ICIP 2016.

Pižurica et al., Digital Image Processing of the Ghent Altarpiece: Supporting the painting's study and conservation treatment, IEEE Signal Proc. Mag., July 2015.

Ruzic and Pizurica, Context-aware patch-based image inpainting using Markov random field modeling, IEEE Trans. Image Proc., 2015.

Yin et al., "Digital cradle removal in X-ray images of art paintings," IEEE ICIP, 2014.

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